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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,664	04/30/2001	Peter Schultz	5259-0018-03	4310

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EXAMINER

HUG, ERIC J

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,664

Applicant(s)

SCHULTZ ET AL.

Examiner

Eric Hug

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/30/01, 11/27/01, and 11/10/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 24-37 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-23 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 4 and 6-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Claims 1-23 is acknowledged. Accordingly, Claims 24-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention there being no allowable generic or linking claim. Election was made without traverse in the Response to Restriction Requirement filed on November 10, 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3, 5, and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shioda et al (JP 58-069736, abstract translation). Shioda discloses preparing a base material for an optical fiber comprising a glass tube with a material deposited on its inner surface. A gas is passed through the starting tube and heated by a laser source directed through the wall of tube, such laser being directed upon the inner surface of the tube. A layer of glass is deposited on the inner surface of the tube, thereby changing the refractive index. The laser is moved parallel to the tube to form a strip of glass layer along the length of the tube. The tube is rotated to form an adjacent strip of glass layer to the first strip that is formed. Thus, one could form an entire layer

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of glass within the tube through successive rotations of the tube in concert with movement of the laser parallel to the tube.

With respect to claims 1 and 2, Shioda reads on the steps of applying a laser beam to the glass tube, penetrating the glass tube, providing a starting point on the inner region of the tube, and moving the beam to deposit glass on the inner surface, thereby changing the refractive gradient (index). Although the abstract above does not mention creating a channel, this must occur for the laser beam to pass through the wall of the tube and interact with the inner surface of the tube.

With respect to the other claims:

Claims 3 and 5: A gas is disposed within the tube and is deposited as a layer of glass (coating) on the inner surface of the tube.

Claim 9: The laser is used to apply energy to the region where the coating layer is formed.

Claims 10-12: Relative axial and rotational movement between the glass tube and laser occur as described above.

Claim 13: It would have been obvious to one skilled in the art that any melting of glass that takes place while heating the glass tube with the laser must eventually be re-fused upon completion of the process (upon cooling).

NOTE: A full translation of this document will be forthcoming in a subsequent office action.

Allowable Subject Matter

Claims 4 and 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 14-23 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 4 and 6-8 are allowable for the additional step of causing thermal diffusion or migration of the coating layer into the glass tube.

Claims 14-23 are allowed, because the prior art does not disclose or suggest creating a composite laser beam from a plurality of laser beams and then applying the composite beam to effect at least two changes in refractive index of a glass object.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cundy et al (US 4,417,911) discloses depositing oxide material on the interior of a glass tube utilizing a heat source such as a laser beam.

Cognalato et al (US 5,279,634) discloses vitrifying a layer of soot deposited on the inside surface of a glass tube using a laser of wavelength corresponding to the absorption band of the soot material.

Dumas et al (US 5,356,448) discloses a method of depositing layers of material onto the inner surface of a glass tube by means of laser ablation of a target material, the target material having the composition of the layers and being ablated while moving axially within the tube.

Atkins et al (US 5,500,031) discloses increasing the index of refraction of a core material of an optical fiber by diffusion of hydrogen and application of heat by means of CO₂ laser.

Damasco et al (US 6,080,148) discloses creating a composite laser beam for controlling the amount of energy in a surgical device.

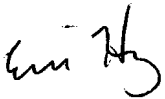
Dianov et al (US 6,125,225) discloses locally changing the refractive index of an optical waveguide by heating the core of the waveguide with an infrared laser.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 571 272-1192. The examiner can normally be reached on Monday through Friday, 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571 272-1189. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571 272-1700.



jeh